IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Noriaki TOKUYASU et al.

Appln. No. 10/533,889 Group Art Unit: 1796

Filed: May 5, 2005 Examiner: John Cooney
For: COMPOSITION FOR FLAME-RETARDANT FLEXIBLE POLYURETHANE FOAM

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, HAMADA Toshiya, hereby declare:

1) That I am one of the inventors of the instant invention; and

2) That the experiments given below were carried out under my general direction and supervision.

Example 3, and Referential Examples a and b

Using the below-specified silicone foam stabilizers, a CAL test (b) (smoldering screening test) was conducted in the same manner as disclosed on pages 31 to 32 of the Specification. Table 1 shows the results. The notations used in Table 1 refer to the components described on pages

27 to 29 of the Specification. Example 3 in this Declaration is the same as Example 3 in the Specification.

Descriptions of the Silicone Foam Stabilizers Used

Example 3

L-620 (manufactured by Witco Corporation, with a surface tension of 21.1 mN/m and a silicon atom content of 4.0% by weight)

Referential Example a

L-5770 (manufactured by Witco Corporation, with a surface tension of 20.7 mN/m and a silicon atom content of 2.7% by weight)

Referential Example b

L-580 (manufactured by Witco Corporation, with a surface tension of 20.5 mN/m and a silicon atom content of 4.9% by weight)

When the content of the catalyst (T-9, tin based) is fixed, the activity of the silicone foam stabilizer varies, and this affects the air permeability. The smoldering screening test is strongly affected by air permeability, i.e., the higher the air permeability, the more easily the test sample is burnt. Without fixing the air permeability, the effect of

the silicone foam stabilizer cannot be accurately measured, and therefore we have changed the amount of the catalyst intentionally in each Example.

Table 1

		Example 3	Ref. Ex. a	Ref. Ex. b
Formulation (all parts by weight)	Polyol Component: MN-3050	100	100	100
	Melamine A (average particle diameter of 45 μm)	5	5	5
	Additive-type phosphorus-containing flame retardant: D-520	14	14	14
	Catalyst: DABCO 33LV	0.08	0.08	0.08
	A-1	0.08	0.08	0.08
	T-9	0.30	0.32	0.22
	Blowing agent: Water	3.9	3.9	3.9
	Silicone foam stabilizer: L-620	1.2	-	-
	L-5770	-	1.2	-
	L-580	-	-	1.2
	Polyisocyanate component: Cosmonate T-80	49.0	49.0	49.0
Properties	Rise time (sec)	83	89	92
	Density (kg/cm^3)	27.6	27.4	28.8
	Air permeability (ml/cm^2/sec)	110	115	109
	CAL test (b) (smoldering screening test)			
	Non-smoldered residue (%)	86.9	90.9	80.5
	Passed/Failed	Passed	Passed	Passed

Remarks: The compositions of Example 3 and Referential Examples a and b each had an isocyanate index of 105.

As shown in Table 1, the flexible polyurethane foam of Example 3, which was prepared by using a silicone foam stabilizer (L-620) having a silicon atom content of 4.0 wt%,

had a non-smoldered residue of 86.9%, and the flexible polyurethane foam of Referential Example a, which was prepared by using a silicone foam stabilizer (L-5770) having a silicon atom content of 2.7 wt%, had a non-smoldered residue of 90.9%. These figures indicate that the foams of Example 3 and Referential Example a have significantly higher flame retardancy than the flexible polyurethane foam of Referential Example b (non-smoldered residue of 80.5%), which was prepared by using a silicone foam stabilizer (L-580) having a silicon atom content of 4.9 wt%.

As is clear from this result, a flexible polyurethane foam having remarkably improved flame retardancy can be prepared by using a silicone foam stabilizer that meets all the requirements of the present invention.

I, the undersigned, declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: February 26, 2009 Toshiya Hamada

HAMADA Toshiya